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ABSTRACT

Because of the high degree of interest in education and physical education in Canada, there has been a phenomenal growth in physical education facilities. Physical educators must become facility specialists in order to contribute to the planning, procurement, and utilization of the new complexes that are being developed. Among the most difficult tasks in developing facilities are justification, recording of details of facilities visited, and the manipulation and orientation of areas in a projected facility. In order to alleviate these difficulties, the facility planning team at the University of Windsor developed three main items: (1) the Survey Check List, which provides a structured comprehensive approach for recording details of existing or projected facilities; (2) the template for outdoor athletic facilities, which provides a scaled guide to assist in recording playing areas, dimensions, and orientation; and (3) the transparent floor planning kit, which consists of transparent plastic sheets over graph paper and various colored, china, flexible pencils which can be used in conjunction with the template to develop the preliminary floor plans and to show the basic orientation from court or floor to floor in an evolving facility. In those situations where a major project is undertaken and the importance of getting the job done with the least expenditure of valuable human and physical resources is paramount, the Program Evaluation Review Technique (PERT) is an appropriate system. (Author/EA)

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A PRACTICAL PLAN FOR DEVELOPING UNIVERSITY PHYSICAL EDUCATION FACILITIES

(A case study at the University of Windsor)

DICK MORIARTY
University of Windsor

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Because of the high degree of interest in education and physical education in Canada, we are witnessing a phenomenal growth in physical education facilities. Physical educators are faced with the need to become facility specialists so that they can contribute to the planning, procurement and utilization of the new complexes which are being developed. New emphasis is needed in physical education facility courses; and every facility resource method, planning experience and planning tool must be utilized. With these facts in mind, "A Practical Plan for Developing University Physical Education Facilities (A case study at the University of Windsor)" is presented for your consideration.

Ellen Mayo, in the *Social Problems of an Industrial Civilization,* pointed out that "sometimes an observation essentially simple carries an importance for practical affairs far beyond anything that can be claimed for it of an intellectual illumination."[1] This statement is the best justification for the research value of the original planning tools developed at the *University of Windsor* in conjunction with the planning of the School of Physical and Health Education Complex.

DEVELOPMENT OF FACILITY PLANNING TOOLS

Among the most difficult tasks in developing facilities are justification, recording of details of facilities visited, and the manipulation and orientation of areas in a projected facility. In order to alleviate these difficulties, the facility planning team at the University of Windsor developed three main items:

1. The Survey Check List which provides a structured comprehensive approach for recording details of existing or projected facilities.
2. The template for outdoor and indoor athletic facilities which provides a scaled guide to assist in recording playing areas, dimensions and orientation.
3. The transparent floor planning kit which consists of transparent plastic sheets over graph paper and various coloured china, flexible pencils which can be used in conjunction with the template to develop the preliminary floor plans and to show the basic orientation from court or floor to floor in an evolving facility.

Survey Check List

The survey check list consists of thirteen pages designed for thorough, quick, accurate recording of facility details. Sample Page One which follows is typical. (Diagram 1)

The opening half of the first page provides an opportunity to record basic information on the individual school under consideration.

The building survey proper begins on the second half of Page 1 with an evaluation of the exterior type of the facility. Generally, there are four basic structure types as illustrated: (a) the hip structure (b) arch frame (c) truss frame and (d) dome frame.[2]

Page 2 of the Survey Check List provides room for an overall diagram of the outdoor facilities and buildings on a scale of 1" = 200'. The main considerations to look for here are: orientation of outdoor facilities to indoor facilities, orientation of all facilities in terms of north, east, south, and west, prevailing winds, general traffic flows and parking areas.

Page 3 of the Survey Check List provides

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HEALTH, PHYSICAL EDUCATION AND RECREATION FACILITIES SURVEY

Name of School _____ Telephone _____

Address _____

Enrolment: Men _____ Women _____

Physical Education Director _____

Athletic Director _____

Coaching Staff _____

_____

_____

_____

_____

Program (Men): Physical Education ☐ No. ___ Majors ☐ No. ___ Required Program ☐ No. ___

Service Program ☐ No. ___ Intramural ☐ No. ___ Intercollegiate ☐ No. ___

Program (Women): Physical Education ☐ No. ___ Majors ☐ No. ___ Required Program ☐ No. ___

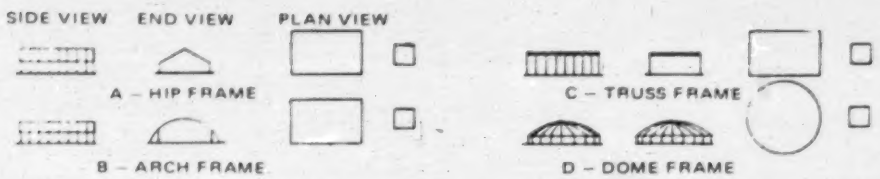
Service Program ☐ No. ___ Intramural ☐ No. ___ Intercollegiate ☐ No. ___

Projected Enrollment _____ Year _____ Program – projected _____

Year _____

BUILDING SURVEY

Exterior Type: – **BASIC FRAMES FOR GYMNASIUMS**



Approximate Size _____

Exterior Finish: Brick ☐ Stone ☐ Concrete Block ☐ Exposed Concrete ☐

Natural Lighting & Percentage of Window Area _____

Number of Entrances and Location _____

Diagram 1

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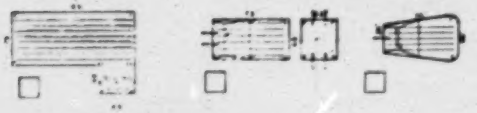
POOL

Style

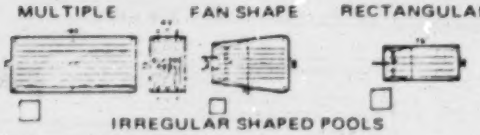
TYPICAL SHAPES AND SIZES OF POOLS

LARGE — T SHAPE; MEDIUM — L SHAPE; SMALL — RECTANGULAR

L SHAPE; MULTIPLE; FAN SHAPE



MULTIPLE; FAN SHAPE; RECTANGULAR



IRREGULAR SHAPED POOLS

Overall Size _____

Height _____ Length _____ Width _____

Pool Size:

Length _____ Width _____ No. Lanes _____

Depth: Shallow _____

Deep _____

Diving Area _____

Basin Structure:

Concrete ☐ Tile ☐

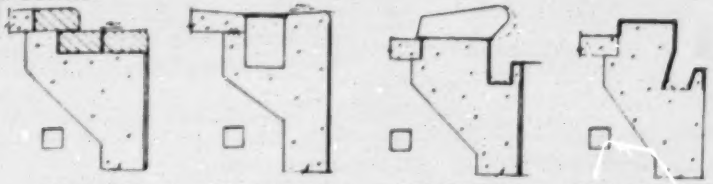
Steel Tank ☐ Aluminum ☐

Fiberglass ☐

Marble dust coating ☐

Non-skid Tile on Turns ☐

Drains and Gutters:



ROLL OUT; DECK LEVEL; RECESSED; SEMI-RECESSED

Closed System Water Recirculation ☐ Open System (overflow to sewer) ☐

Lighting: Incandescent ☐ Fluorescent ☐ Mercury Vapour – (Natural ☐

Iodine Quartz ☐ Natural ☐ (Colour Corrected ☐

Means of access to lighting _____

Combinations & Comments _____. Ft. Candles from light meter 4' from ground ____

Recessed ☐ Suspended ☐ Shields ☐

Heating: Suspended Units ☐ Radiant in floor ☐

Ventilation (fenestration): 100% fresh air ☐ Mechanical ☐

Ceiling Construction	Concrete	Steel	Wood
	Cast in place ☐	Arches ☐	Laminated ☐
	Precast ☐	Beam & Girder ☐	Trusses ☐
	Prestressed ☐	Trusses ☐	☐
Acoustic Treatment:	Perforated Metal Pan ☐	Cork ☐	Cemented Panels ☐

Diagram 2

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room to record details of lobby space.[3] Important things to record here are:

1. Control for daily use of the building.
2. Crowd control for spectator activity.
3. Number, location and general traffic patterns between ticket booths and entrances and exits.

Page 4 of the Survey Check List provides a check list for recording mechanical details on the gym, such as lighting, heat, and ventilation, floor structure, seating capacity and number of teaching stations.

Pages 5 and 6 provide a chart for indicating the orientation of indoor courts for the main gym and auxiliary gyms. The template for indoor facilities is made up on a scale of 1" = 40' and proves helpful in this section.

Page 7, duplicated opposite (Diagram 2), and Page 8 deal with the pool and natatorium. Three general pool sizes and shapes are listed. In addition to the structure of the pool, Pages 7 and 8 look at pool details such as the basin structure, drains and gutters, circulation system, filter system, purification, underwater windows, lights and acoustics.

Page 9 of the Survey Check List deals with the dressing, shower and equipment space. The area and orientation of this unit depends upon the system used.[4] The equipment-dispensing storage area is important to consider in conjunction with the dressing rooms.

Page 10, duplicated next page (Diagram 3), contains a check list on the administrative and academic areas. These two areas are among the most inadequate in many physical education and recreation buildings.

The final three pages of the Survey Check List provide space for an overall diagram, floor-by-floor, indicating the traffic flow, teaching stations and stairwells.

TEMPLATE FOR OUTDOOR AND INDOOR ATHLETIC FACILITIES

In all major fields of university facility planning, with the exception of Physical and Health Education, templates are available and made to scale to assist in recording visitations and also for experimentation for proposed facilities. The templates developed at the University of Windsor were aimed at removing this deficiency. Outdoor facilities are made up on a scale of 1" = 200', while the indoor facility template is made up on the scale of 1" = 40'. The templates include dimensions for most Canadian playing areas.

A picture of the indoor template follows (Diagram 4). The templates themselves are made of plastic with the inside dimensions cut out to provide a guide for tracing. Outer dimensions indicate graphically the accepted safety requirements. The templates afford a quick means of recording field and court orientation on the Survey Check list. The template is also helpful in experimentation with proposed facilities and can be used with the transparent floor planning kit in working on schematic floor plans.

TRANSPARENT FLOOR PLANNING KIT

The transparent floor planning kit consists simply of a number of sheets of transparent plastic superimposed over a piece of graph paper. The outdoor template can be used in orientation of the overall building site.

By using the indoor template and the china pencil, a physical educator can experiment with various court orientations and outside dimensions for each floor in the proposed facility. The erasable nature of the china flexible pencil allows for easy re-orientation. A variety of colours can be used to identify various courts – basketball in black; badminton in yellow; volleyball in green, etc.

Another use of the Floor Planning Kit is to show the relationship of one floor to another, particularly in drawing up preliminary first floor plans.

Once suitable orientations are decided upon they can be transferred to graph paper.

APPLICATION OF FACILITY PLANNING TOOL

Architect Richard Hawley Cutting, addressing the *Proceedings of a Study in Planning for Gymnasium, Fieldhouse Construction*, made the following suggestion:

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Administrative Offices

No. Director's offices_____ Size_____ Location_____

No. faculty and staff offices_____ Size_____ Location_____

Staff Meeting Room and Lounge ☐ Size_____ Location_____

General Office Area ☐ Size_____ Location_____

Reception Desk ☐ No. secretary accommodations_____ Record Room & Safe ☐

Intercom System ☐ P.A. System ☐ Light Control Box ☐ Work Room ☐

Academic Facilities

No. classrooms_____ Size_____ No. of seats_____

Tiered ☐ Demonstration Desk ☐ Wall Screen ☐

Audio-visual Accommodations ☐ Location_____ Dimmers for lights ☐

T.V. Monitors ☐ No._____ Location_____

Blackboard System_____ Lighting System_____

Seminar Rooms ☐ No._____ Size_____ Location_____

Laboratory Area

Anatomy & Kinesiology ☐ Size_____ No. of students_____

Cold Room ☐ Size_____ Cooling Unit_____

Animal Room ☐ Size_____ No. & style of accommodations_____

Physiology of Exercise ☐ Size_____ No. of students_____

Chemical Analysis ☐ Size_____ Body Composition ☐ Size_____

Basil Metabolism ☐ Size_____ Movie Analysis ☐ Size_____

Faraday Room ☐ Size_____ Strength Lab ☐ Size_____

Reaction Room ☐ Size_____ Calculating Room ☐ Size_____

Research Room ☐ Size_____ No._____

Audio-Visual Room ☐ No._____ Projector slide ☐ Film loop ☐ Motion ☐

No. of work Rooms_____ Size_____ Location_____

No. of Storage Areas_____ Size_____ Location_____

Overall cost of facility_____ Cost per square foot_____

Diagram 3

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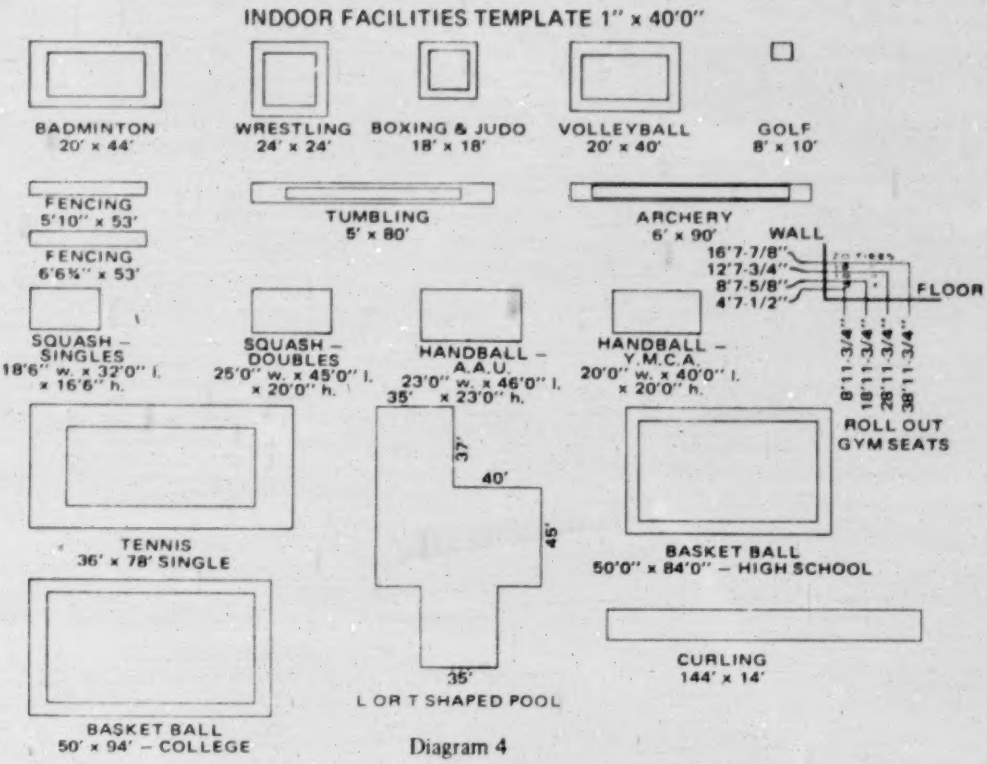

Diagram 4

Lay out for the architect what you believe to be the ideal – in other words, master plan your programme, talk it over, get the ideas of others. Think big. Forget, for the moment, the limitations imposed by the faculty, trustees, or existing buildings. Dream a little, but put it down on paper.

The Survey Check List, Template and Floor Planning Kit help you put it down on paper.

REFERENCES

[1]Ellen Mayo, *The Social Problems of an Industrial Civilization*, (Boston: Division of Research, Harvard Business School, 1945), p. 116.

[2]For inherent economic and practical advantages of each see: M. S. Kelliher, "Basic Structure Types for Gymnasium," *Scholastic Coach*, XXXIII, 5 (January, 1964), p. 11.

[3]See Herman J. Penn, *Encyclopaedia and Guide to Planning and Establishing an Auditorium, Arena, Coliseum, or Multi-Purpose Building*, 1st ed. (Greenville, S.C.: Penn-Fleming Publishing Company, 1963), p. 369-376.

[4]For recommendations see: *Planning Facilities for Health, Physical Education and Recreation*, Revised 1962 (The Athletic Institute, Merchandise Mart, Room 805, Chicago, Illinois), p. 59.

[5]Richard Crawley Cutting, "What Does the Architect Need from the Athletic Director", National Association of College Directors of Athletics, *Proceedings of a Study in Planning Gymnasium Fieldhouse Construction*, (New York: May 18, 1969), p. 14.

It takes little to make a wise man happy. On the other hand, there is nothing that can satisfy a fool.

PERT PLANNING FOR PHYSICAL EDUCATION FACILITIES

by

R. J. MORIARTY
University of Windsor

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Acronyms are in vogue today reflecting the trend in society for (a) simplification through symbolism, (b) synthesis of specialization and (c) creation of systems to integrate differentiated expertise. PERT, or Program Evaluation Review Technique, is an effective method for initiating and maintaining structure in order to achieve completion of a complex program demanding maintenance of cooperative effort over a certain period of time.(1)

Anatomically, PERT consists of:

Program — an ultimate goal to be accomplished by means of maximizing a series of long-range aims and immediate objectives;

Evaluation — periodic assessment, examination or judgement of quantitative and qualitative progress toward immediate objectives and long-range aims.

Review — critical reevaluation of a predetermined time schedule in terms of progress toward the ultimate goal, with an eye to necessary change;

Technique — a skill or ability employed in a scientific method to accomplish valid, reliable, objective and determinant outcomes.

In other words, in those situations where a major project is undertaken and the importance of getting the job done with the least expenditure of valuable human and physical resources is paramount, PERT is an appropriate system. It has been utilized to put a man on the moon and build an Olympic city; and it can be used in building facilities for Physical Education (including recreation, service, intramural and intercollegiate).

A PERT program is, of course, only as good as those who put the program on paper, implement its activities, and evaluate and review its events. Expertise and team effort is an indispensable ingredient in a successful PERT program. In this sense, it is analogous to the computer science tautology GIGO; Garbage In = Garbage Out!

In order to achieve both maximum sustained input of interest and expertise while at the same time avoiding the enormous encumbrances of committee work, it is recommended that two levels of facility planning teams be employed: one Primary Facility Planning Team (PFPT) and a number of Secondary Facility Planning Teams (SFPT). Members of PFPT should include the Director of the Physical Education program, the Director of Athletics, the architect, and the school engineer and/or business agent. The basic planning team should be relatively small and augmented by subcommunities (SFPT) drawn from the Physical Education faculty, coaching staff, students, faculty as well as representation from members of the University community and public who will be using the facility.

The Physical Educator's Preparation and Contribution to Facilities

Give the architect full details on your existing and future program and facilities for education and sports; forget, for a moment, the trustees and administrators, dream a little but put it down on paper. (2)

The architect needs six items from those involved in planning new facilities:

1. a full description of **current** and **planned programs,**
2. a full description of current and future needs in **facilities,**
3. **specifications** (including minimums and maximums) for specific areas,

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4. comments on **basic orientation** in view of day to day and special use,
5. priorities in **phasing**, and
6. a **contract.**

The last item puts the physical educator right in the middle of facility planning. It is one of his most demanding and significant professional challenges, for his efforts in this area will outlive him and continue his influence on the program more than any other professional endeavor. Every physical educator will be involved in facility development in his career, and it is essential that those immediately involved become program and/or facility specialists. This can be achieved by the usual professional route:

1. A course such as the formal facility programs now being offered at many universities or clinics, symposium or workshop offerings of professional associations.(3)
2. Review of literature, beginning with general texts on organization and administration,(4) proceeding to specialized works, such as Harry Scott's classic, **From Program to Facility in Physical Education,**(5) and continuing with special planning guides or periodical issues available through professional organizations such as AAHPER, Athletic Institute, Education Facility Laboratories (EFL), NCAA, National Intramural Association (NIA), and NACDA in the United States; and CAHPER, Canadian amateur sports governing bodies and CIAU in Canada.(6)
3. Consultation and correspondence with professional associations, building and standards groups, and facility specialists like Richard Theibert of Education Facilities Laboratories (EFL) and Edward Coates of the Council of Educational Facility Planners at Ohio State University.(7)
4. Survey through questionnaire to assess the contemporary state of facilities and equipment in your area of development.(8)
5. Visitation to see what the do's and don't's are in building.
6. Experimentation using survey check lists, and floor planning kits.(9)

All of these methods should be employed by the members of a facility planning team and would be the first order of business in planning facilities.

A Physical Education Facility PERT System

Because of the complexity of facilities planning a PERT (Program Evaluation and Review Technique) network should be established along the lines listed below. (See below, PERT Facility Planning and Model).

The PERT Facility Planning Model is basically self-explanatory and needs little amplification. As in any PERT program, a circle (O) indicates an event and a line and arrow (——→——) indicates activity. Events are numbered in each circle and described below by the numbered notation. Activities are noted between events (O) above the activity (——→——) line. The time sequence under the time key.

For example, a PERT facility program begun on January 1, 1972, at event 1 (①) initial appointment and notification of a commission to plan a facility would be followed by the activity (——→——) selection and briefing of primary and secondary facility planning teams in preparation for event 2, the initial meet-

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ing of planning teams and establishment of subcommittees on February 1, 1972. Activities of subcommittee meetings would culminate with event 3, subcommittee submission to the PFPT of reports, including minimums and maximums requirements, by March 1, 1972. Simultaneously, the PFPT would be conducting the activity of visitations. Subsequent to the submission of subcommittee reports at event 3, the PFPT would be ready for review and consultation activities prior to event 4, coordinated report and recommendation by the PFPT on May 1, 1972. The process can be similarly traced through the opening of the building, event 15, on February 1, 1974 (optimistically) or May 1, 1974 (pessimistically).

Throughout the process the primary and secondary planning teams must meet continuously and maintain rapport and open communication. The representatives of the physical education school must pay constant attention to detail (for if they don't, no one else will). Stress in subcommittees should be on review of floor plan blueprints and specification in detail, including not only gross items such as size, orientation and major equipment, but also minute detail: lighting, wall floor finish, location of electric outlets, accommodations for technical media, door nameplates and anything wanted a year after the facility is open. Oversight on seemingly insignificant items such as double doors in storage areas or door identification plates can draw a large percentage of operating budget if they are overlooked in capital facility and equipment. To make matters worse, many schools do not allow equipment purchase for one year after a facility is opened.

The overall orientation of the facility in terms of core building, (student locker facilities, administrative and public accommodation and classroom floor) natatorium, gymnasium, hockey rink, outdoor facilities, and floor pattern is the responsibility of the PFPT and particularly the physical educators who will have to use it. They should watch for the following:

1. Selection of a site adequate in size and allowing for future expansion.
2. Orientation of outdoor to indoor facilities and building flow patterns should be established on day to day use not for the fifteen or so days the facilities are used for spectator activity.
3. Consideration should be given in the facility to phasing in case full funds are not available for overall construction. Once a gym is built, it can't be altered. You are better off to settle for one phase that meets your needs than to agree to a facility which is inadequate before it is opened.
4. In planning think of what you will need for the future (twenty-five or twenty-nine months from when you start) for that is probably when you move in.

Facility planning deserves a physical educator's very best effort! Good intentions and desire must be augmented by:

1. a scientifically tested system such as PERT,
2. cooperative planning from PFPT and SFPT,
3. expertise of the physical educator developed through
   (a) professional preparation
   (b) reviews of literature
   (c) consultation and correspondence
   (d) visitations
   (e) survey check lists, and experimentation and experience with floor planning kits, and
4. exchange of information between the physical educator and architect on current and projected program and facilities required, minimum and maximum specifications, basic orientation, phasing and contract.

Involvement in facility planning can be a gratifying professional experience or a disastrous one. The joy or pain is magnified. Goofs cost thousands of dollars and they will stand as a tribute to the ineptitude of those involved long after they are gone; just as a well-planned facility stands as a tribute.

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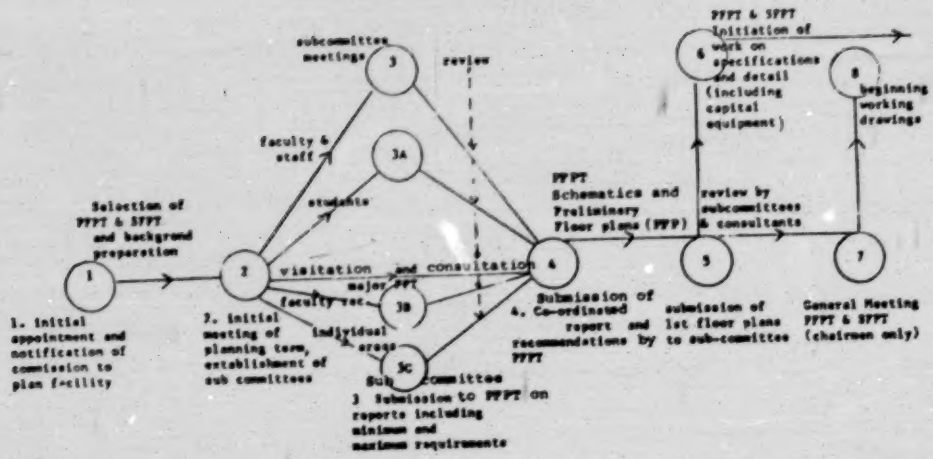
PERT Facility Planning and Model

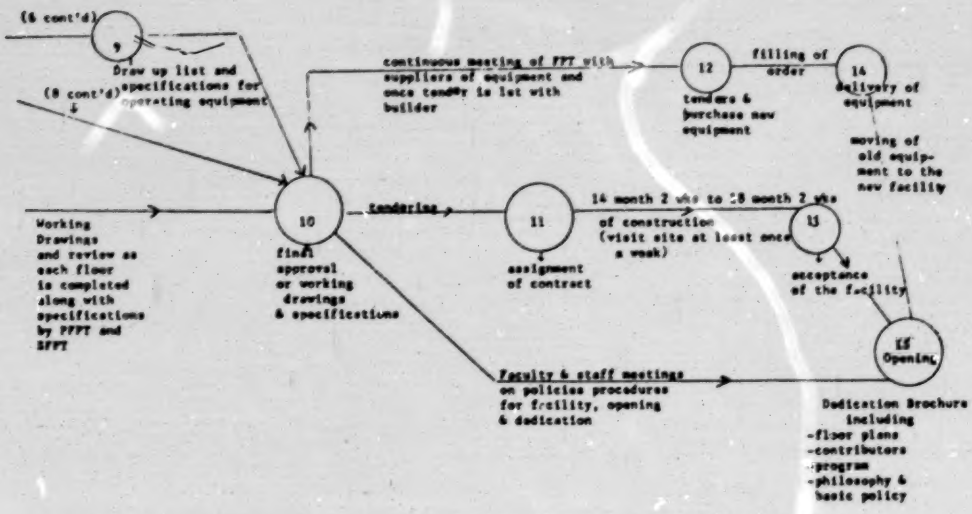


TIME KEY

1=0 month 2=0+1 month 3A = 3C= 0 + 2 month 4 = 0 + 4 month 5 = 6 = 0 + 4 month 7 = 0 + 4 months + 2 wks
8 = 0 + 4 months + 3 wks

PFPT = Primary Facility Planning Team
SFPT = Secondary " " "
○ = Event
→ = activity

PERT Facility Planning and Model



9 = 0 + 5 months 10 = 0 + 8 month + 2 wks 11 = 0 + 9 month + 2 wks 14 = 0 + 23 to 29 months
12 = 0 + 16 month + 2 wks 15 = 0 + 26 to 30 months
13 = 0 + 24 to 28 month

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FOOTNOTES

1. For details on PERT see:
   a) Russell D. Archibald and R. Villoria, **Network-Based Management Systems (PERT/CPM)** (New York: John Wiley and Co. Ltd., 1967).
   b) Federal Electric Corporation. **Programmed Introduction to PERT: Program Evaluation and Review Technique** (New York: John Wiley and Co. Ltd., 1963).
   c) Anthony L. Iannone, **Management Planning and Control with PERT, MOST and CPM.** (Englewood Cliffs, New Jersey: Prentice-Hall, 1968).
   d) Richard J. Levin and C. A. Kirkpatrick, **Planning and Control with PERT-CPM** (New York: McGraw-Hill, 1966).
   e) R. L. Martino, **Critical Path Networks** (New York: McGraw-Hill Book Company, 1970).
   f) K. McLaren, **Network Analysis in Project Management** (London: Cassell, 1969).
   g) Joseph J. Moder and Cecil R. Phillips, **Project Management with CPM and PERT** (2nd ed.; New York: Van Nostrand Reinhold Co., Division of Litton Education Publishing Inc., 1970).
   h) L. W. Morris, **Critical Path: Construction and Analysis** (New York: Pergamon, 1967).

2. "A Study in the Construction of Gymnasium-Field House and Other Related Athletic Facilities," **Proceedings of the Second Study by the National Association of Collegiate Directors of Athletics** (Cincinnati, Ohio: 1968).

3. The National Association of Collegiate Directors of Athletics conducted a series of outstanding studies on facilities between 1966 and 1969. Proceedings are available through Mr. Mike Cleary, NACDA Executive Director, Cleveland, Ohio. See also yearly addresses in the NACDA Annual Meeting Proceedings.

4. Charles A. Bucher, **Administration of Health and Physical Education Programs Including Athletics** (5th ed.; St. Louis: The C. V. Mosby Company, 1971).

5. Harry Scott, **From Program to Facility in Physical Education** (New York: Harper and Brothers, 1958).
   See also specialized texts and monographs such as:
   a) **Tennis Courts (Construction, Maintenance and Equipment)** by United Lawn Tennis Association (New York: United Lawn Tennis Association, 1966).
   b) Thomas C. Bennett, **The 20th Century Track** (Milwaukee, Wisconsin: University of Wisconsin Extension Publication, 1963).

6. See the examples listed below:
   a) **College and University Facility Guide for Health Physical Education, Recreation and Athletics** by Participants in the Fourth National Facilities Conference, 1968 (Washington, D.C.: The Athletic Institute and AAHPER, 1968).
   b) "Shelter for Physical Education," an Education Facilities Laboratory Report of Architectural Research Group (The A&M College of Texas, College Station, 1961), and
   Guide for Planning Educational Facilities (Columbus, Ohio: Ohio State University Council of Educational Facility Planners, 1969).
   c) **Scholastic Coach Annual Building and Equipment Issue**, I-XLII (January 1930 - January 1972).
   d) Official rule books available through the CIAU, NCAA and amateur sport governing bodies in Canada.
   e) Richard L. Gray, "An Architect Plans an Intramural Physical Education Building," in **Proceedings of the Nineteenth Annual Conference of the National Intramural Association** (Austin, 1968), pp. 101-11 and proceedings of each year.
   f) **National Association of Collegiate Athletic Directors Journal**, I-V (Cleveland, NACDA, 1965-70); renamed **Athletic Administration**, VI (Cleveland, NACDA, 1971).
   g) **Physical Education Facilities in School Programs**. Recommendations Prepared by a committee of the Metropolitan Toronto Association of Supervisors of Physical and Health Education (Ottawa: CAHPER, 1969).

7. The services of Richard Theibert are available and funded through Education Facilities Laboratory (a Ford Foundation service) for educational institutions building innovative and experimental facilities. Edward Coates is a member of the School of Physical Education at Ohio State University and serves as a consultant in the area of physical and health education to the Council of Educational Facility Planners funded by and located at Ohio State University. There are limits on formal consultative resources in Canada but most universities have enjoyed facility development in recent years and have on their faculty a knowledgeable facility specialist.

8. The most recent survey of Canadian university facilities is "Contribution of Facilities," in **Role of Universities and Colleges in the Development of Fitness and Amateur Sport in the Canadian Community**, Joseph Kurtzman, Chairman (Ottawa: Canadian Intercollegiate Athletic Union, 1970), pp. 16-20 and 90-94.

9. See Dick Moriarty, "A Practical Plan for Developing University Physical Education Facilities (A Case Study at the University of Windsor)," **CAHPER**, XXXVII (May-June, 1971), pp. 24-29.

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